Environmental Science

ASSESSING THE IMPACT OF CCA WOOD PRESERVATIVE ON DISLODGEABLE ARSENIC AND SOIL ARSENIC LEVELS IN CHICAGO AREA PLAYGROUNDS

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Chromated copper arsenate, or CCA, is a common arsenic-containing wood preservative used to extend the life of lumber used in the construction of homes, decks, and playground equipment. Commercial sale of CCA-treated lumber is being phased out following a recent EPA recommendation. However, existing CCA-containing structures may cause potential health hazards due to leaching of the arsenic. An investigative study of several Chicago-area playgrounds was performed to determine whether leaching from CCA-treated wood causes elevated levels of arsenic in wood mulch, playground soils, or on the surfaces of playground equipment. Sites investigated to date include Indian Boundary Park in the Rogers Park neighborhood and Oz Park in the Lincoln Park neighborhood. Wood mulch and underlying playground soils were collected directly. The surfaces of playground equipment were sampled by wiping with moist towelettes. Background soils were collected in each park well away from the vicinity of the playgrounds. Samples were dried, pulverized, and wet digested with nitric and sulfuric acid, and the digests analyzed by atomic absorption spectroscopy using a continuous-flow hydride generation technique. The accuracy, precision and detection limit of the method were assessed using replicate analyses of standard reference materials and control samples. The arsenic content of wood mulch and playground soils will be compared to the arsenic content of the background soils and to EPA target levels for arsenic in soil. The amount of arsenic dislodgeable from play structure surfaces will be used to calculate potential levels of arsenic ingestion by hand-to-mouth transfer, and compared to US EPA dietary limits.